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WAR DEPARTMENT

DIGESTS AND LESSONS
OF RECENT
MILITARY OPERATIONS



THE
GERMAN CAMPAIGN IN POLAND
SEPTEMBER 1 TO OCTOBER 5, 1939

March 31, 1942

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Prepared under direction of the
Chief of Staff



75275

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1942

WAR DEPARTMENT,
WASHINGTON, March 31, 1942.

Digests and Lessons of Recent Military Operations—The German Campaign in Poland, September 1 to October 5, 1939, is published for the information of all concerned.

This digest has been compiled from War Department reports and from other governmental and authentic professional military sources.

[A. G. 062.11 (1-26-42).]

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(For explanation of symbols see FM 21-6.)

(II)

CONTENTS

	Paragraph
Introductory	1
Historical sketch	2
Strategy, initial dispositions, and missions	3
Operations	4
Lessons	5
	Page
Maps	(facing) 36

- No. 1. Concentration areas.
2. Situation map of the German Army.
3. Polish plan for retirement to the southeast and actual withdrawal routes of Polish divisions.

DIGESTS AND LESSONS OF RECENT MILITARY OPERATIONS

THE GERMAN CAMPAIGN IN POLAND SEPTEMBER 1 TO OCTOBER 5, 1939

1. Introductory.—The Army of the Third Reich was unleashed completely for the first time in the Polish campaign, which was a preview of German strategy, tactics, and technique. In 20 days of fighting the new German military machine annihilated the Polish armies; Warsaw capitulated after 27 days; and the last point of resistance was subdued in 35 days. Undoubtedly this swift victory was due in great measure to the overwhelming superiority of the German Army in both numbers and matériel, but of equal importance was the fact that the German High Command had learned vital lessons from the stalemates of position warfare in the first World War.

New German concepts of warfare that materialized fully on Polish battlefields started a new military era marked by the return of the war of movement. The mobility and speed made possible by extensive motorization, together with the increased fire power and shock force of armored corps and divisions, and the close support of bombardment aviation, restored to all ground arms the ability to maneuver. The need for more intensive and closely coordinated supporting fire was filled by developing the air-infantry-artillery combat team to a new peak of efficiency. And air power demonstrated radically improved strategic as well as tactical capabilities.

While developing these factors of speed, fire power, air power, and the ability to maneuver to a degree of effectiveness never realized before, the German Army, in its training, had devoted itself intensively to the coordination of the separate arms. The German victory over Poland was achieved not by the shock action and penetrations of armored forces alone, nor by air power alone, but by the combined operations of all arms under unified command.

Finally, the German Army was indoctrinated with the idea of total war—the idea that all the resources of the nation must be concentrated ruthlessly and relentlessly against all important hostile means of resistance in order to win a swift and complete decision.

2. Historical sketch (map No. 1).—*a. Poland.*—Before the opening of this campaign, Poland was reputed to be a strong military power. It was still unrealized, however, that the standards by which

she was rated were largely obsolescent. Nor had Germany's military power been fully tested and evaluated before her army and air force struck at Poland on September 1, 1939. It is true that the Reich had already used the Spanish Civil War as a proving ground for her ideas and matériel but not on a scale that disclosed the full measure of her might.

In a military sense Poland was considerably inferior to Germany, although her soldiers fought with great courage. And, being predominantly agricultural, she was hopelessly outstripped by her highly industrialized opponent in all other war-making potentialities. In fact, all economic factors were adverse for Poland, except that she was self-sufficient in major items of food supply.

For some years Poland had been transferring her industries to the great "Central Industrial District of Poland," a project that was intended not only to revolutionize her industrial potential and structure but to assure their strategic safety. This "District" of about 25,000 square miles extended from the south of Warsaw to the Slovak frontier, and was equally distant from the German border on the west and from the Russian border on the east. The absorption of Slovakia by Germany had, however, weakened the defensive possibilities of this relocation area, and the advent of war found the project far from completion.

Poland, with a population of approximately 35,000,000 people, had large minorities that tended to make her a loosely knit state. Only about 63 percent of the people were ethnically Poles. In the east and northeast were 1,500,000 White Russians; in the south and south-east, more than 5,000,000 Ukrainians with the ferment of an autonomy movement among them; and in the west, in former German Poland, 750,000 Germans. Long before hostilities began, the agents of Germany were skillfully promoting disunity among these minorities, creating incidents, and obtaining vital military information.

Geographically Poland was unfortunately situated for war. On her west was Greater Germany, a nation of 90,000,000 people. In the east, along her longest border, was the Union of Soviet Socialist Republics, with a population of 180,000,000. East Prussia, a German province separated from the mother country by the Polish Corridor, projected as a salient into Poland's northern frontier. Slovakia gave access from the south. From any of these contiguous regions any part of the Polish nation could easily be reached by hostile bombers.

Poland for the most part is a country of low, flat terrain. Her only natural ramparts were the Carpathian Mountains on the south-

ern border. Her network of rivers—the Vistula, the Bzura, the Narew, the Bug, the San, and their many tributaries—might have provided an interior defensive position, but few fortifications had been constructed on their banks. Furthermore, unusually dry weather at the time of the campaign had drained the rivers or kept them low and reduced their value even as natural barriers.

Although the terrain was generally favorable for mechanized warfare, the roads of Poland were largely unimproved and unsuited for heavy motor traffic. On the other hand, during the Polish campaign the ground was so hard and dry that the German forces often found it easier to move across open fields than on roads. The railroads were deemed, however, to be reasonably adequate for war needs.

The peace strength of Poland's Army consisted of 280,000 men, and it was estimated that she could muster about 2,500,000 trained reserves. Mobilization had been delayed, however, by fear of giving offense to Germany. As a result, Poland was able to place in the field only about 600,000 fully equipped men when the German forces overran her borders. The destruction of Polish railroads at the beginning of the war impeded further mobilization. The Polish Army that actually took the field comprised 30 divisions, 12 cavalry brigades, and 1 armored brigade. During the entire campaign Poland's complete mobilized strength probably never exceeded 900,000 or 1,000,000 troops.

Poland's reputation as a leading military power had rested mainly on the large number of her potential reserves. In armament and equipment she was overwhelmingly outclassed, qualitatively and quantitatively, by her opponent (see table of comparative strength below). By tradition and doctrine, and because of inadequate economic resources and the condition of the roads, the Polish Army was inclined to place strong emphasis on horse cavalry.

Efficiency and training in the Polish Army were fair by Eastern European standards but much lower by German and French. In time of peace Poland had no army commanders and was thus deprived of the advantage of having leaders skilled in the handling of large units. The proportion of corps and army troops was smaller than in the other leading armies of Europe.

The most solid element in the officer corps of the Polish Army probably consisted of company officers who were uniformly trained in cadet schools following the first World War and were devoted to their profession. Less satisfactory was the efficiency of the higher officers, majors and above, whose military schooling was diverse, having been acquired in the German, French, Austrian, and Russian

THE GERMAN CAMPAIGN IN POLAND

armies. Individually, however, the Polish soldier was physically strong and inured to hardships and possessed a record of creditable soldiering under foreign flags during the first World War.

COMPARATIVE STRENGTH OF THE POLISH AND GERMAN INFANTRY DIVISIONS

(German and Polish strengths are represented as of September 1, 1939.)

	Poland	Germany
Total officers and enlisted men.....	12,000	¹ 15,823
Horses.....	2,000	3,859
Motor vehicles.....	{ About 5 staff cars. ² }	1,067
<i>Component units:</i>		
Infantry regiment.....	³ 3	⁴ 3
Light artillery regiment.....	1	1
Medium artillery battalion.....	0	1
Medium artillery regiment.....	1	0
Antitank company.....	1	1
Infantry howitzer company.....	0	1
<i>Armament:</i>		
Light machine gun.....	750	342
Heavy machine gun.....	50	100
Light mortar.....	0	81
Heavy mortar.....	45	54
Infantry howitzer, 75-mm.....	0	18
Infantry howitzer, 150-mm.....	0	6
Howitzer, 105-mm.....	24	36
Howitzer, 150-mm, German; 155-mm, Polish.....	12	8
Gun, 105-mm.....	0	4
Gun, 75-mm.....	36	0
Infantry rifle.....	5,110	11,606
Antitank gun, 37-mm.....	60	72

¹ All German units are maintained at a constant strength so that it is not necessary to make a transition from a peace to a war footing in time of emergency. The strength of the German division during the Polish Campaign was reliably reported to have been increased to about 17,000 by the attachment of horse cavalry, reconnaissance, and antiaircraft units.

² Polish divisions had few motor vehicles and their Tables of Organization did not prescribe a fixed number. Each unit, in time of emergency, requisitioned civilian motor vehicles according to its individual needs.

³ 2,500 officers and enlisted men each.

⁴ 3,051 officers and enlisted men each.

Only a part of Poland's matériel could be considered modern. Small arms and machine guns were generally of satisfactory quality, but the artillery was conglomerate—Russian, Austrian, German, and French—and largely obsolescent. The Polish Army appears to have had less than half the prescribed number of antitank guns when the German onslaught began, and these were of inadequate caliber.

For defense of the entire nation against air attack, only 200 heavy

and 200 light antiaircraft guns were available. Aircraft, largely of Polish design and manufacture, was inferior to Germany's in every respect. Poland had only 900 first-line airplanes. There was also a serious shortage in tanks, for from a total of approximately 600 tanks only 1 armored brigade had been formed. Most of the tanks were dispersed as corps and army tank battalions.

b. Germany.—A strictly disciplined totalitarian state, Germany for several years had geared her economy and her industries for war, and had produced huge reserves of materials required by her formidable military machine. Favored by a vastly superior army and air force, Germany was also enviably situated so as to be able to employ her traditional encirclement strategy. Her armies pressed against three sides of Poland, whose frontiers were marked by several vulnerable salients.

Germany had buttressed her western limits opposite France and Belgium with a powerful and permanent system of fortifications known as the West Wall. On her eastern front, in her isolated province of East Prussia, she had constructed many permanent works along the Polish border. Another fortified area was due east of Berlin between the Oder River and the Polish frontier. This was called the "Oder Quadrilateral," a strong barrier that played a significant role in the strategic concept of the German High Command in this campaign.

On September 1, 1939, Germany was organizing an army of 120 divisions, and had already mobilized approximately 1,500,000 men. In the Polish campaign she employed, or had available, forces estimated at approximately 1,250,000 men, comprising 60 to 70 divisions. Her Air Force possessed 7,000 first-line airplanes.

The German Army contained four fully motorized divisions in the peacetime organization. Strong devotion to tank development had produced a force of 6,000 tanks, and three-quarters of these had been formed into panzer, or armored, divisions. The rest were organized as GHQ tank regiments for close infantry support. Five heavy and four light armored divisions took part in the Polish campaign.

The standard of training in the German Army and Air Force was high, despite the rapid numerical expansion that followed the reintroduction of conscription in 1935. Very little emphasis was placed on administrative and "housekeeping" functions, thus making it possible for higher commanders to spend most of their time and energy in troop training. The High Command received many opportunities in peacetime maneuvers to handle large forces ranging up to 100,000 men. Furthermore, military operations in Austria in

March 1938, in Sudetenland in September and October 1938, and in Bohemia and Moravia in March 1939, had given the High Command actual experience in the logistics of large forces.

In all its preparations for war the German Army adhered to its traditional tactical doctrine of the offensive. In the General Staff School nine tactical problems in offensive action were given for every defensive one. And even in defensive training, stress was placed on active rather than passive defense. The concept of mere dilatory resistance was not countenanced. It may be stated as a German maxim that the initiative must be achieved in all circumstances, despite inferior numerical strength or risks of piecemeal attacks, ambushes, and exposed flanks.

The German High Command considered reducing the size of the division for open warfare, but then decided to adopt the reinforced regiment (regimental combat team) as the logical unit for such fighting. The entire Army, as a result, was trained to fight and march as reinforced regiments.

Since 1933 German artillery had been newly equipped. Guns of 75 and 77 mm were replaced in all divisions with 105-mm howitzers. Heavy artillery was abundant. The heavy howitzers were of 150 and 210 mm, and the long range cannon were of 105, 150, and 240 mm.

Among the lighter weapons the water-cooled Vickers machine gun of the first World War was discarded in favor of an air-cooled type known as the MG 34. This weapon served as a light as well as a heavy machine gun, depending on whether a bipod or a tripod with cradle was used.

German Infantry was equipped with an unusual number of supporting weapons. Each regiment that took the field against Poland was equipped as follows:

- Twelve 37-mm antitank guns.
- Twenty-seven 50-mm infantry mortars.
- Twelve 81-mm infantry mortars.
- Six 75-mm howitzers.
- Two 150-mm howitzers.

Strong emphasis was also placed on antitank defense. A battalion of thirty-six 37-mm antitank guns was added to each division, and there were a number of GHQ reserve battalions of similar composition.

In addition to her own great stocks, Germany obtained, through the occupation of Czechoslovakia, a vast supply of first-class equipment, particularly tanks, heavy and light artillery, and automatic small arms.

3. Strategy, initial dispositions, and missions (map No. 1).—

a. Poland.—(1) *Strategy.*—The original Polish strategic plan, adopted before the outbreak of war, apparently called for a determined final defense along the general line of the Narew, Vistula, and San Rivers. The security of this defensive position was to be provided by strong delaying action forward of the line. Highly mobile reserves were to be formed in the rear of the line from troops which were to have fallen back from the initial delaying positions along the frontier.

There is reason to believe, however, that the Polish High Command decided to accept battle initially in open warfare, since an immediate withdrawal behind the river line would have involved the surrender, without a struggle, of two-thirds of Poland's fuel and mineral resources. Other factors to be considered in support of this belief are these: the entire active army was disposed far west of the river line, with the mass concentrated in the triangle Lodz—Posen—Cracow, and permanent fortifications had been constructed only on the Narew River. Smaller fortifications, such as pill boxes, were the only obstacles that sparsely dotted the banks of the other rivers.

Not until September 6, after 6 days of fighting, when the deterioration and encirclement of the Polish armies had reached a dangerous point, did the Polish High Command begin to issue orders for a general withdrawal behind the rivers. But it was then too late, for the swift, successful penetrations and envelopments carried out by the German armies thoroughly frustrated this belated plan.

There is also reason to believe that despite dispositions made ostensibly for a delaying, defensive action, Polish plans called for some offensive action as well. At least a strong concentration of troops in the exposed Polish Corridor lends substance to a claim of the German High Command that the Poles intended to invade East Prussia.

The war preparations of the Polish Air Force apparently were singularly deficient. Few emergency airfields were prepared in advance, and most squadrons remained at their permanent stations, which were the first targets of German bombers.

(2) *Initial dispositions and missions.*—The concentration of the Polish Army for war with Germany was accomplished in August. Six groups, each equivalent to an army, were created and each was directly subordinate to Polish GHQ, which was located in Warsaw. These groups and their disposition were as follows:

(a) *North Group.*—In the area Warsaw—Lomza—East Prussian frontier—Soldau—Mlawa—Modlin. Distributed from Augustow on the east to Strasburg (east of Graudenz) on the west; composed of

four divisions (1st, 8th, 18th, and 20th) and three cavalry brigades. The 1st Division was in army reserve east of Warsaw.

It is believed that the mission of this group was to delay on the frontier and hold the line of the Narew at all costs.

(b) *Thorn Group*.—In the area Graudenz—Thorn—Bromberg—Polish Corridor. Composed of five divisions (4th, 9th, 15th, 16th, and 27th) and one cavalry brigade. Two divisions and one cavalry brigade were in the Corridor; one division was in the vicinity of Bromberg; and two divisions were just east of Graudenz.

The mission of this group was apparently to fall back from the Corridor to a delaying position east of the Vistula, with the right flank resting on Graudenz, and then to retire southeast on the fortress of Modlin.

(c) *Posen Group*.—In the area Kutno—Wloclawek—Gnesen—Posen—Kempen. Distributed along the Posen frontier between the Netze River and Kempen; composed of five divisions (10th, 14th, 17th, 25th, and 26th) and one cavalry brigade. Four of the divisions were concentrated close to the German frontier between Posen and Kalisch, thus placing the weight of this group south of Posen.

The mission of this group was to oppose a German advance into Posen and to fall back to a delaying position between Bromberg and Kolo, connecting with the delaying position of the Thorn Group behind the Vistula and of the Lodz Group behind the Warthe.

(d) *Lodz Group*.—In the area Wielun—Sieradz—Lodz—Radom—Wloszczowa—Tschenstochau. Distributed in considerable depth; composed of nine divisions (2d, 3d, 7th, 12th, 13th, 19th, 28th, 29th, and 30th) and two cavalry brigades. Five divisions and one cavalry brigade were on the frontier between Sieradz and Tschenstochau, and four divisions and one cavalry brigade were in reserve positions between the frontier and Radom.

The mission of this group was to defend strongly on the frontier, to fall back to a prepared delaying position east of the Warthe, and then to retire toward the east and hold the line of the Vistula between Warsaw and Deblin.

(e) *Cracow Group*.—In the area Kattowitz—Teschen—Neumarkt—Cracow. Composed of four divisions (5th, 6th, 21st, and 23d), one armored brigade, and one cavalry brigade. The four divisions were closely grouped without depth south of Kattowitz, between Teschen and Cracow. The right flank was protected by the cavalry brigade in the vicinity of Tarnowitz, while the armored brigade covered the left flank near Neumarkt in the foothills of the Carpathian Mountains.

The mission of this group was to protect the industrial area of Teschen, to fall back on Cracow in order to extend the line of the Warthe position, and eventually to retire east of the Vistula and the San, with its right flank at Deblin.

(f) *Przemysl Group*.—In the area Jaslo—Tarnow—Rzeszow—Przemysl—Sanok. Composed of three divisions (11th, 22d, and 24th). Intended as protection for the left flank of the Polish armies in the north, this group was disposed along the Slovakian frontier to block the passes of the Carpathian Mountains.

The mission of this group was ultimately to fall back behind the San River in conformance with the Cracow Group.

b. *Germany*.—(1) *Strategy*.—The German High Command conceived a double envelopment of the Polish armies, based on Field Marshal Count von Schlieffen's development of the classic "Cannae" concept. This was to be carried out by two strong groups of armies that were to trap the Polish armies in western Poland.

In this pincer movement the northern arm was to slice through the heart of Poland from Neidenburg in East Prussia through Mlawa and over the Narew River to the Vistula, just east of Warsaw. The southern arm of the pincers was to be launched from the Silesian-Polish frontier northeastward and was to join the northern arm near Warsaw. Under this plan the Polish forces were to be caught in the converging arms of the German forces and crushed before they could retire behind their traditional defensive river line. In the event that the initial double envelopment did not succeed in trapping and destroying the Polish armies, the German plan comprehended a second and outer double envelopment, the pincer arms of which were to sweep in great arcs through eastern Poland, from East Prussia in the north and from the Carpathian Mountains of Slovakia in the south. These thrusts were intended to encompass the high ground east of the Vistula and San Rivers, between Siedlce in the north and Lemberg in the south.

Thus the grand plan of an inner and outer double envelopment took account of the possibility that the Polish armies might escape the jaws of the inner pincers, in which case they would be gathered in by the German armies that were to cut through the hinterlands.

A strict passive defense in the West Wall fortifications was prescribed to guard Germany's rear against the armies of the Western powers. Eleven active and from 7 to 10 reserve divisions manned these works during the Polish campaign.

About one-third of the Air Force, which comprised 480 squadrons with 7,000 first-line airplanes on September 1, 1939, was made available for the Polish campaign. This portion of the Air Force was

organized into two fleets, the First and the Fourth. Apparently these fleets were not subordinated to the Army Group commanders, but appear to have operated under unified Air Force direction. However, Colonel General Milch, the actual though not nominal commander in chief of the German Air Force, was a subordinate of the Field Commander of the German Army, Colonel General von Brauchitsch, who directed the entire Polish operation, with General of Artillery Halder as his Chief of Staff.

In addition to the two air fleets, a number of pursuit, dive-bombing, observation, and liaison airplane units were attached directly to the armies for reconnaissance and close tactical support. It is estimated that a total of 2,500 operational German airplanes were used during the campaign.

(2) *Initial dispositions.*—The German forces were organized into two groups of armies for the Polish theater of operations. They were directly under the control of General von Brauchitsch, whose headquarters were in the vicinity of Berlin. Cooperating naval units operating in the Baltic under the command of General Admiral Albrecht were also subordinate to General von Brauchitsch. The composition of the two groups of armies follows:

(a) *Southern group.*

Headquarters at Neisse

Col. Gen. von Rundstedt

Chief of Staff—Lt. Gen. von Manstein

<i>Army</i>	<i>Commander</i>	<i>Headquarters</i>
Fourteenth.....	Col. Gen. List.....	Nentitschein
Tenth.....	Gen. of Artillery von Reichenau...	Oppeln
Eighth.....	Gen. of Infantry von Blaskowitz..	Breslau

Air Fleet

Four..... Gen. of Aviation Loehr

(b) *Northern group.*

Headquarters at Bad Polzin

Col. Gen. von Bock

Chief of Staff—Lt. Gen. von Salmuth

<i>Army</i>	<i>Commander</i>	<i>Headquarters</i>
Fourth.....	Gen. of Artillery von Kluge.....	Jastrow
Third.....	Gen. of Artillery von Kuechler...	Mohrungen

Air Fleet

One..... Gen. of Aviation Kesselring

The assignment of divisions to the various armies is only partially known and to army corps almost entirely unknown. Known assignments follow:

<i>Army</i>	<i>Army Corps</i>	<i>Divisions</i>
Fourteenth.....	VII, I (Mt).....	5th, 7th, 44th, and 45th, Inf; 1st, 2d, and 3d Mt; 2d Armd; 4th Light (Armd); 1st and 3d Slovak.
Tenth.....	XV (Armd), XVI (Armd), VIII.	4th, 8th, 14th, 18th, and 28th Inf; 13th and 29th Mtz; 1st, 4th, and 5th Armd; 2d and 3d Light (Armd).
Eighth.....	X, XIII.....	10th, 17th, 24th, 27th, and 30th Inf; 221st and 224th Res.
Fourth.....	II, III.....	3d, 23d, and 32d Inf; 50th and 208th Res; one unnamed Landwehr; 2d and 20th Mtz; 3d Armd; 1st Light (Armd).
Third.....	I, XXI.....	1st, 11th, 12th, and 21st Inf; 80th, 217th, 228th Res; 10th Armd; and 1st Cav Brig.

Between the Northern Army Group and the Southern Army Group was a broad gap thinly lined with troops. However, a report that the German Armies lacked a center must not be taken too literally, for the gap was strongly defended by the fortress works of the Oder Quadrilateral between Frankfurt-am-Oder and the Polish frontier.

This fortification area was garrisoned by active frontier (Grenz) troops of a strength equivalent to a division. In addition, reserve formations lined the frontier between Schneidemühl and Glogau. These were supported by the 19th, 31st, and 46th Infantry Divisions, which constituted both a local protective force and a reserve for the whole eastern operation. Further reinforcements were available in the many reserve divisions which could have been brought up from the interior of Germany by September 10.

These fortresses enabled the German High Command to economize on the troops needed for effective defense of the center and to concentrate the maximum striking power of the German Army on the wings, particularly in the southern group of armies. This was in keeping with the German strategy of double envelopment.

(3) *Missions*.—The main effort of all the German armies was to be made by the Tenth Army, which was to strike from Silesia direct to Warsaw. This army was to establish contact with the Third Army, which was assigned to make the main effort of the northern group from Ortelsburg in East Prussia to the area due east of Warsaw. These armies were to comprise the arms of the inner pincers. The

outer double envelopment, planned for a later stage of the campaign, was to be executed from the south by the Fourteenth Army and from the north by elements of the Third Army, which was to be reinforced to take part in this maneuver. Details of army missions follow:

In the southern group the Fourteenth Army was to attack from Mahrisch Ostrau and Slovakia, capture the industrial area of Teschen, protect the right flank of the Tenth Army, seize the high ground at Lemberg, and cut Polish communications with Rumania.

The Tenth Army, ordered to destroy the Polish armies, was to attack from Oppeln to Siedlce and seize the high ground in the Lysa Gora region.

The Eighth Army, attacking from Breslau toward Warsaw, was to protect the north flank of the Tenth Army.

In the northern group the Fourth Army, attacking from Pomerania, was to cut off the Corridor at its base and make contact near Graudenz with the XXI Corps of the Third Army from East Prussia. Then it was to force a crossing of the Vistula between Bromberg and Graudenz, continuing the attack to the southeast.

The Third Army was to reduce Graudenz (a particular mission for the separate XXI Corps) and force the crossings of the Narew and Bug Rivers. This army also was to isolate Warsaw from the east and consummate the outer envelopment with the Tenth Army in the vicinity of Siedlce.

The missions of the two air fleets were—

- (a) To gain air supremacy.
- (b) To disrupt the Polish railroad, road, and signal communications.
- (c) To destroy the Polish war and aircraft industries.
- (d) To cooperate tactically with the German ground forces.

4. **Operations** (map No. 2).—For purposes of convenience, the narrative of the Polish campaign has been divided into five phases, each of which is distinctive in character:

Phase I. September 1-5—German Army breaks through Polish frontier defenses.

II. September 6-8—Decisive German victory.

III. September 9-14—Encirclement of Polish armies.

IV. September 15-20—Annihilation of Polish armies.

V. September 21-October 5—Occupation of East Poland.

a. Phase I: September 1-5—German Army breaks through Polish frontier defenses.

The German armies opened their offensive on September 1 at 5:45 AM, crossing the Polish frontiers on all fronts. Flying ahead of

the advancing armies, the German air fleet struck with full force at 5:30 AM, blasting the ground installations of the Polish Air Force, which had effected no dispersion or concealment and had taken, apparently, no protective measures whatever. Consequently, available Polish airplanes were largely destroyed on their fields and in their hangars. The railroads were heavily bombed next, and as a result between 300,000 and 400,000 Polish reserves failed to reach their mobilization positions. Polish resistance both from the ground and in the air was ineffective.

Meticulous cooperation with the German intelligence service enabled the German Air Force to bomb the Polish General Headquarters incessantly as it moved from place to place. This caused an early breakdown of communications with the various army commanders and is a factor to be reckoned as contributing to Poland's defeat.

A spy system had been thoroughly organized before the outbreak of hostilities. When the invasion began, spies behind the Polish lines efficiently reported vital information to aerial as well as ground forces. Many fifth columnists held key positions in the communications as well as other fields. During the fighting more spies were dropped by parachute. These men cut communications and spread alarming rumors in civil communities. Some operated in Polish officers' uniforms and intercepted and countermanded military orders.

(1) *Fourteenth Army (List).*—The Fourteenth Army attacked in two distinct groups. One group amounting to a strong corps, consisting largely of Austrian troops, debouched from the vicinity of Mährisch Ostrau and struck due eastward toward Cracow. The second group, also amounting to a corps and including at least one mountain division, attacked from the Sillein area of northern Slovakia. The initial objectives of this latter group were the strategically important Jablunka Pass, south of Teschen, and the town of Neumarkt, south of Cracow and just north of the High Tatra Mountains.

With the intention of preserving intact the valuable industrial area around Teschen, the Mährisch Ostrau group sought to gain ground rapidly to the east. On September 2 and 3 this group broke through the Polish pill box line that stretched from Nikolai through Pless and Biala to the Carpathians.

This rapid action, coupled with a similar deep penetration of the Tenth Army to the north of Kattowitz, rendered the industrial area untenable and it was evacuated by the Poles on the 5th. Pinched off without direct attack, this region was found intact except for one damaged mine, and within a few days mills and mines were again being operated by the same workers.

The Sillescu group captured Jablunka Pass, broke through the passes of the High Tatra Mountains, and by September 4 had seized Neumarkt. On the 5th the line had been advanced to the vicinity of Cracow, the left flank joining with the right flank of the Mährisch Ostrau group.

On the 5th a third corps of the Sillescu group consisting of German mountain divisions and two Slovak divisions attacked from the Zipser Neudorf region of Slovakia, east of the High Tatra Mountains. By the evening of the 5th the corps had reached the outskirts of Neu Sandez, its first objective.

(2) *Tenth Army* (von Reichenau).—The strong Tenth Army was disposed along the Silesian-Polish frontier, north of the Upper Silesian industrial area, between Kreuzburg and Tarnowitz. This army was concentrated on a narrow front, in great depth, as befitted a force that was assigned to make the main effort. In opposition were four Polish infantry divisions and one cavalry brigade of the Lodz Group, concentrated partly behind the half-completed pill box line of the Warthe River and partly west of Tschenschau. The remaining divisions of this Polish group and another cavalry brigade were in reserve to the east, but were too far away to be of effective support.

The Tenth Army gained an early tactical success, overrunning the Warthe line on a broad front during the opening days and capturing the city of Tschenschau. This progress was primarily due to the aggressiveness of the German combat groups, each of which was a reinforced infantry regiment, and in part to the onslaught of armored corps on the north flank of the Tenth Army. By September 3 this armored corps had pushed on to Radomsko, a town 50 miles from the frontier. This maneuver materially assisted the frontally attacking German infantry units, for the armored attack plunged into the rear of the Polish lines and scattered surprised reserves who were assigned to hold the defensive position behind the Warthe River.

The Polish forces began to withdraw and by September 4 the operation turned into a rout. The three northern Polish divisions retired toward Tomaszow Mazowieckie. The remaining division of the frontier forces, the 7th, was encircled and annihilated and the division staff made prisoners just east of Tschenschau. The four divisions initially in reserve were withdrawing toward the Vistula.

It was during these early actions of the Tenth Army that the Germans demonstrated for the first time tactics of encirclement that were to typify the fighting of their armored corps in subsequent battles and campaigns. The two armored corps of this army ripped through the lines, then circled swiftly in the Polish rear to form a

sack into which other German troops drove enemy units to destruction. By employing these tactics the Tenth Army was able to advance 70 miles in 5 days, its front extending from Piotrkow in the northwest to the vicinity of Checiny in the southeast.

(3) *Eighth Army* (von Blaskowitz).—The Eighth Army, weakest of the German southern group, had concentrated in Middle Silesia, between Trebnitz and Krenzburg. Its mission was to protect the left flank of the Tenth Army.

This army was organized in two corps, the X on the left and the XIII on the right. Each corps initially placed two divisions in the front line; the X Corps had the 10th and 17th Divisions, with the 27th in close support. The composition of the XIII Corps is not known. The 30th Division covered the left flank of the X Corps, from a position well to the rear, echeloned to the left, to ward off a possible Polish counter thrust from Posen and Kalisch.

During this first phase the Eighth Army was not seriously opposed, and on the 4th and 5th it penetrated the Warthe River line, which was held only by the 13th Polish Division. On the evening of the 5th the town of Zdunska Wola was taken. Then bridgeheads were established east of the Warthe that were broad and deep enough to permit a farther advance toward Lodz.

(4) *Fourth Army* (von Kluge).—The Fourth Army effected its concentration in two groupings. The stronger of these, consisting of three corps, was drawn up along the frontier between Schlochau and Schneidennühl, facing the broad base of the Corridor. A weaker corps of one or two unidentified but second-line divisions concentrated in the vicinity of Butow, opposite the seacoast section of the Corridor.

The mission of this army was to cut the Corridor as rapidly as possible and advance to the Vistula River between Bromberg and Grandenz. Then it was to effect a crossing on both sides of Culm and continue on the east bank in the direction of Modlin and Warsaw.

The main effort was to be made by the II Corps, consisting of three divisions in line and several in reserve. A supporting supplementary attack was to be made by the Third Army in East Prussia. The combined attack of these two armies was intended to pinch off the Corridor and trap all Polish forces holding the seacoast region of Gdynia and those farther south that might fail to withdraw beyond the Vistula.

Attacking at dawn on September 1, the Fourth Army had reached the line Konitz-Nakel by evening. The III Corps operated on the right and the II Corps on the left. A mixed corps of armored and motorized divisions under Major General Guderian, peacetime inspec-

tor of German Schnelltruppen (Mobile Troops), guarded the left flank of the II Corps. On the 4th the line of the Vistula and the Netze had been attained from Marienwerder on the East Prussian border to Nakel. This advance was won by the relentless advance of the German Infantry of the II Corps, but it was materially assisted by an effective penetration made by the armored corps under General Guderian, operating on the left flank. The 3d Panzer Division of this corps had opened a 5-mile gap in the Polish line. Then, without concern for protecting its own flanks, it had plunged on to the Vistula.

On the night of September 4-5 the II Corps crossed the Vistula on both sides of Culm. This action trapped the 9th and 27th Divisions and the Pomorska Cavalry Brigade of Poland in the Corridor, west of Culm. The main body of these troops was surrounded on September 5 after they had made several unsuccessful attempts to break through. It was claimed in Berlin that 25,000 officers and men, 90 guns, and considerable rolling stock were captured. On the 5th the II Corps also established contact with the XXI Corps of the Third Army near Graudenz.

The German corps at Butow pushed into the maritime region of the Corridor, encountering strong resistance from Polish reserve and naval shore formations near Gdynia. This corps received assistance from various Danzig military and semimilitary units.

Thus, early in the campaign, the Fourth Army had not only pinched off the Corridor and established communications with East Prussia, but was headed toward Modlin and Warsaw.

Having accomplished the first part of its mission by September 5, the Fourth Army began regrouping its forces on the same day, transferring the 23d Infantry and 3d Panzer Divisions to the Third Army to permit it to begin an attack on Bialystok and Brest Litovsk. From this action the German High Command hoped for a quick and decisive strategic success.

(5) *Third Army* (von Kuechler).—The Third Army concentrated its main forces in the triangle Osterode—Neidenburg—Allenstein. Its principal objective was to advance southeastward over the Narew and Bug Rivers to the area east of Warsaw. During the 3d and 4th of September, the XXI Corps, which had the independent mission of assisting the Fourth Army to close the Corridor, broke through the obsolescent forts protecting Graudenz. On the 5th this corps established contact with the Fourth Army.

The main attacking force of the Third Army consisted of the 1st, 11th, and 12th Infantry Divisions, the 10th Panzer Division, the 1st Cavalry Brigade, one or two storm trooper regiments, and an in-

definite number of reserve and Landwehr formations, all concentrated north of Mława.

On the 1st and 2d of September this large force made a determined effort to capture Mława, but strong resistance and the strength of the fortified line allowed only minor progress. Several German tank attacks were repulsed. During the night of the 2d and 3d the main effort was shifted eastward, and the motorized elements of the Third Army turned from the vicinity of Mława to Willenberg, a move that caught the Polish forces unawares.

Advancing rapidly on the 3d, the Third Army captured the important road junction of Przasnysz, compelling the Polish forces defending Mława to evacuate that city and withdraw toward Warsaw. The left wing of the army reached the Narew near Rozan on the evening of the 5th, while the right wing advanced from Mława and captured Ciechanow.

At the end of the first phase the Third Army had only just obtained contact with the main defensive positions along the Narew, which were still intact. Nowhere had it advanced more than 40 miles.

(6) *Air operations.*—Apparently every known airdrome throughout Poland was repeatedly bombed each day from September 1 to 4. On September 3 the weight of the German air attack was shifted to the railroad communications west of the Vistula to prevent their use for the regrouping and withdrawal of the Polish armies. Air attacks on Polish troop columns began on September 5. Most of the known Polish aircraft factories were destroyed as well as the large ammunition works at Sandomierz. Parachute troops were dropped behind the Polish lines in Polish Silesia and destroyed telephone and telegraph wires.

At the end of this phase of operations the Polish air force had been reduced to impotence and the German air fleets had undisputed freedom of operation.

b. Phase II: September 6-8—Decisive German victory.

(1) *Fourteenth Army (List).*—The divisions of the Polish Cracow and Przemyśl Army Groups facing the Fourteenth Army drew back rapidly toward the San River line without offering decisive battle. The course of their retreat indicated that they hoped to organize a broad but firm defense of that line between Sandomierz, at the junction of the San and Vistula Rivers, and Przemyśl. The withdrawal, however, was marked by considerable disorder. There were many indications that Polish GHQ at Warsaw, even at this early stage of the campaign, had lost touch with its southern army groups, compelling the commanders of these groups to act on their own responsibility.

On September 6, without opposition, the *Malrisch Ostran* group of the Fourteenth Army captured Cracow, principal city of southern Poland. The same day the *Sillein* group occupied Nen Sandez. On the 8th the Galician towns of Gorlice, Pilzno, and Tarnow were taken and a bridgehead was seized at Debica on the east bank of the Wisloka River.

The operations of the Fourteenth Army between the 6th and 8th were not decisive and the San River line was still intact, but the disorganized withdrawal of the Polish forces caused the German High Command to believe that no effective resistance would be encountered on that line.

(2) *Tenth Army* (van Reichenau).—On September 5 this army was stretched on a broad front from Piotrkow to Checiny. A panzer corps under General of Cavalry Hoepner was concentrated around Piotrkow, while the other panzer corps of the army, commanded by General of Infantry Hoth, guarded the right flank against a hostile attack from the enemy divisions to the south around Cracow.

The four Polish divisions which had originally opposed the Tenth Army's assault began to withdraw northward toward Lodz on September 5, while the reserve divisions retired eastward toward the Vistula. The latter divisions were preparing to halt a German pursuit along the line of the Lysa Gora Hills in front of Radom.

The parting of these two forces of the Polish Lodz Group was due to the rapid advance of the two German panzer corps. One Polish force moved northward and the other eastward, thereby opening a broad and inviting gap in front of the Tenth Army's left wing and center. Between Piotrkow and Warsaw stood no Polish force of consequential size. And between these two cities ran the best paved road in all Poland. At Piotrkow was poised General Hoepner's powerful panzer corps of two armored divisions. Here was a unique situation offering armored forces an opportunity to show their strategic capabilities.

General Hoepner's panzer corps dashed into the gap and reached Tomaszow Mazowieckie on September 6. On this day and on the 7th and 8th the operations of the Tenth Army amounted to a headlong race to the Polish capital. One column of the panzer corps captured Rawa Mazowiecka on the 7th and was in the southwestern suburbs of Warsaw by evening of the following day.

Another column of the panzer corps, operating on the right, took a more easterly route, swinging from Tomaszow Mazowieckie toward Gora Kalwaria on the west bank of the Vistula. Then it followed the river bank northward toward the Polish capital. On the evening of the 8th this column also was in the suburbs of Warsaw.

Neither column, however, was sufficiently concentrated on this evening to undertake occupation of the city. German infantry divisions were reported to be 70 miles in rear of their armored corps. Very strong and undefeated Polish forces were believed to be in and around Lodz, threatening the left flank and rear of the panzer force.

Hoepner's deep wedge between the Polish armies had changed the strategic situation overnight. Strong elements of the Thorn, Posen, and Lodz Army Corps stood on the west of this wedge. Widely scattered forces were on the east. The wedge stood between these Polish forces and their traditional river defense, the Vistula.

While the left wing of the Tenth Army advanced on Warsaw, the center and right continued toward the Lysa Gora Hills mass and Radom. The important industrial city of Kielce fell on the 6th. On the 7th the Army attacked the 3d and 12th Polish divisions frontally around Skarzysko-Kamienna.

The withdrawal of the Polish Cracow Army Group from Cracow relieved General Hoth's panzer corps of the necessity of protecting the Tenth Army's right flank. Now its mission was to prevent the enemy's withdrawal from Radom and the Lysa Gora Hills to the safety of the Vistula.

Driving swiftly from its position southeast of Kielce, the panzer corps advanced northward along the west bank of the Vistula and captured Zwolen and Radom during the afternoon and evening of the 8th. This cut the line of retreat of the 3d, 12th, 19th, and 29th Polish divisions. On the 8th a flanking detachment captured Sandomierz and its munitions factories.

Although the line of retreat of the Polish divisions was severed, they were still intact and the panzer corps lacked the power to defeat them. Nevertheless the advance to Radom was of extreme strategic importance, for the southern Polish front was shattered, the four divisions were in jeopardy, and the Polish hold on the middle Vistula front, the last natural line of defense, was seriously threatened.

(3) *Eighth Army* (von Blaskowitz).—During this phase of the campaign the Eighth Army continued to advance in a general northeasterly direction without important incidents. On the 8th the army passed on both sides of Lodz without occupying it, and toward evening reached the vicinity of Ozarkow, northwest of Lodz, and Brzeziny, to the northeast.

The 30th Division was echeloned to the left rear of the left flank of this army to prevent interference with its movements by the strong Polish forces in the province of Posen. On the 8th the Eighth Army was still entirely unaware that these Polish forces of about five divi-

sions had begun to withdraw from Kalisch, Posen, and Thorn and were rapidly nearing the army's left flank.

The failure of the German intelligence service to observe this development was to result in a grave crisis for the Eighth Army in the following week and, momentarily at least, to jeopardize the entire German plan of campaign. Later the Germans stated that their failure to discover the assembling Polish mass was due to the fact that the Polish units marched at night, took cover in villages and woods in daylight, and did not fire upon aerial reconnaissance forces.

(4) *Fourth Army* (von Klings).—The operations of this army, which was numerically weakened on September 5 by the transfer of the 3d Panzer and 23d Infantry Divisions to the Third Army, were of relatively slight interest during this phase. The III Corps, constituting the right wing element of the Fourth Army, captured Bromberg on September 6, and by the 8th had advanced close to Hohensalza.

The II Corps established bridgeheads on the east bank of the Vistula on the 5th. By the evening of the 8th this corps had captured Strassburg and, to the south, had crossed the Drewenz River and advanced to Lypin. Only weak Polish detachments seemed to stand between this force and the fortress of Modlin.

During this phase all rail lines across the Corridor were repaired and placed in operation again.

(5) *Third Army* (von Knechler).—By the night of September 5 the striking force of the Third Army stood in two groups, one at Ciechanow and the other facing Rozan on the Narew River. The day was spent in troop movements necessary to change the direction of this army. It had been attacking due south from East Prussia toward Modlin and Warsaw, but the army commander had never intended to plunge frontally against the fortifications protecting the Polish capital to the north. Now the army was turned southeastward, with the intention of driving over the Narew and Bug Rivers toward Siedlce, 50 miles east of Warsaw. The capture of Siedlce would isolate the Polish capital.

On the morning of the 6th the attack began. The Narew was forced near Pultusk and Rozan on the 7th after heavy fighting in which the attacking troops suffered severe losses. The Polish bridgehead fortifications on the west bank at Rozan and Pultusk were masked and the crossing was effected on both sides of both cities. This action forced the Poles to evacuate both bridgeheads on the 7th. The Germans then began a pursuit toward the Bug River in the direction of Wyszki and Brok. On the 8th, Polish Cavalry penetrated the southeastern area of East Prussia but was repulsed.

The forcing of the Narew opened a path to the interior of Poland. This was another success that profoundly influenced the entire situation, for the Narew River line was the only Polish defensive position north of Warsaw.

(6) *Air operations.*—During the period September 6–8 the German Air Force continued its operations against the airfields and communication systems of western Poland. Repeated heavy bombing attacks tore up the railroads leading from Thorn, Posen, and Kalisch to the Polish capital. These attacks were intended to retard the regrouping of the Posen and Thorn troops that were trying to retire westward.

On the 8th the German Air Force destroyed the Vistula bridges at Deblin, an achievement of more than local importance, for near Radom it aggravated the plight of the four Polish divisions whose retreat to the Vistula was menaced by General Hoth's panzer corps.

Most of the German airplanes brought down up to the end of this phase were not victims of enemy pursuit aviation or antiaircraft artillery but were shot down by Polish infantrymen with rifle fire.

(7) *Polish strategy.*—With the lines crumbling on all fronts, the Polish High Command on the evening of September 6 had ordered its armies to retreat. The forces along the Narew River were ordered to recapture Rozan by counterattack and then to hold the river. But this action failed, and the troops were directed to relinquish the line of the Narew and retire behind the Bug River. Units in the vicinity of Modlin were to withdraw to the juncture of the Bug and the Vistula. The remnants of the Thorn Group and the army in the Province of Posen were to retire behind the Vistula, while the Lodz Group was to shift to the south of Warsaw, in the vicinity of Gora Kalwaria. Forces on the Pilica River were ordered to retreat to Annapol on the eastern bank of the Vistula, and the Pzemyśl Group and part of the Cracow Group received orders to take up positions on the Dunajec River, from its junction with the Vistula to the Carpathian Mountains.

At midnight on September 7 the General Headquarters of the Polish Army, which had already experienced considerable difficulty in maintaining contact with its armies in the field, decided to transfer from Warsaw to Brest Litovsk, a distance of approximately 120 miles.

c. Phase III: September 9–14—Encirclement of Polish armies.

(1) *Fourteenth Army (List).*—On the evening of September 8, troops of the Fourteenth Army had reached the general line Gorlice—Pilzno—Debica. In their front the Polish armies were trying to retire to defensive positions behind the San River. This withdrawal, which was made in two groups, was not carried out entirely in an orderly manner. The Cracow Army Group moved northeastward in

order to defend the lower San and the Vistula, from Zawichos, near their confluence, to Lezajsk. The Przemyśl Group, which now consisted of only two divisions, withdrew due east toward Lemberg in order to bar the upper San from Lezajsk to the Carpathians.

The German advance during this period was unusually rapid. The two armored divisions of the Fourteenth Army, the 2d Panzer and the 4th Light Divisions, cut loose from the foot divisions, dashed toward the San, and seized its crossings before they could be organized for defense.

On September 9 the army had reached the line Dukla—Rzeszów—Kolbuszowa, an advance of 35 miles in some places. The following day the Fourteenth Army gained very important tactical and strategic successes. The advanced armored divisions that had occupied Rzeszów on the 9th forged ahead 40 miles more on the 10th and seized bridge-heads on the east bank of the San at Rzymno and Jaroslav.

The 24th Polish division, which should have denied the crossing in this sector, had retired in a more northerly direction and was not near Jaroslav. Thus the armored forces were able to cross the San unhampered at this point.

An equally important success was gained by the 1st German Mountain Division, which forced a crossing of the San at Sanok, in the Carpathian foothills, against strong resistance by the 11th Polish Division, which withdrew toward Przemyśl.

The Fourteenth Army pressed forward in forced marches to the north and south of the fortress of Przemyśl, its pursuit gaining momentum. On the 12th the army's right flank reached Sambor. A strong detachment of Infantry was loaded in requisitioned trucks and dispatched toward Lemberg. On the same day armored units from Jaroslav reached the outskirts of Lemberg, and for the next few days confused fights occurred in its environs. Thirty miles west, the 11th and 24th Polish Divisions, endeavoring to retire toward Lemberg, were intercepted near Grodek and halted.

Northwest of Lemberg, armored units succeeded on September 13 in crossing the Lublin—Lemberg highway at Tomaszów Lubelski and Rawa Ruska. On this day the main elements of the Polish Cracow Army Group were in the vicinity of Bilgoraj, on the east bank of the San, far in the rear of these armored forces.

Seizure of the San line, the last suitable defensive position in south Poland, was a strategic success that opened eastern Galicia to the German invaders and prevented the retreat of the Polish forces south into Rumania. The Cracow Army Group had no recourse but to continue retreating eastward in the hope of finding temporary refuge in the roadless wilderness of the Pripyet Swamps.

(2) *Tenth Army* (von Reichenau).—During the period September 9–14 the Tenth Army fought in two distinct combat groups in widely separated sectors.

On the right wing General Hoth's panzer corps, which had cut across the line of withdrawal of the 3d, 12th, 19th, and 29th Polish Divisions at Radom and Zwolen, now received the support of German foot divisions in attacking this Polish force of more than 60,000 men. On the 9th and 10th the four Polish divisions were completely encircled. Battered from all sides, they made desperate efforts to escape but failed. The bulk of the force surrendered on the 12th—60,000 officers and men, 143 guns, and 38 tanks.

On the left wing, General Hoepner's panzer corps renewed its attack on Warsaw, employing Lieutenant General Reinhardt's 4th Panzer Division and motorized Infantry. At first the attack penetrated almost to the city's main railway station, but Polish resistance was too strong for such a small force. At nightfall the German troops withdrew to the western suburbs. During the next few days they awaited reinforcements, but support came slowly and was insufficient for a renewal of the attack. The repulse suffered by the armored units in this first effort to storm Warsaw taught the German Army an important lesson from which it profited in many subsequent battles. This was to isolate cities and strong fortifications by passing around them, leaving their reduction to the motorized and foot divisions that followed the armored spearheads.

Meanwhile a great crisis had arisen north of Lodz and along the Bzura, where the main Polish armies withdrawing from Posen and Thorn had attacked the Eighth Army with considerable success. Every unit that could be spared from the Tenth Army was rushed to the assistance of the Eighth.

Almost the entire left wing of the Tenth Army was thrown into the battle on the Bzura and only a screening force was left to contain the Polish forces in Warsaw. The critical phase of the Bzura battle came on the 11th and 12th, when Polish divisions captured Sochaczew and secured strong footholds on the right bank of the Bzura. Further details of this battle are given below in the operations of the Eighth Army.

After its success at Radom the right wing of the Tenth Army seized bridgeheads on the east bank of the Vistula at Pulawy and Annapol. These bridgeheads were widened and deepened on the 14th.

(3) *Eighth Army* (von Blaskowitz).—On the evening of September 8 the Eighth Army had passed Lodz to the east and west and had reached the line Ozorkow—Brzeziny. Lodz, according to plan, was not to be occupied until the 9th. The army commander hoped

to seize the line of the Bzura on the 9th as a means of fulfilling his mission of protecting the left flank of the Tenth Army.

Polish forces were known to be in and around Kutno and along the Bzura, but their strength was gravely underestimated. The German High Command believed that these forces amounted to only five infantry divisions and two cavalry brigades. Actually they comprised 12 divisions and the 2 brigades, more than double the strength of the Eighth Army. More than half of these forces had not hitherto been engaged.

General von Blaskowitz, however, had carefully watched his left flank, and the 30th Division, which he had echeloned behind and to the left of his X Corps, proved to be the salvation of his army. Nevertheless, this division alone was too weak to hold the Polish forces.

Early on the 9th the Eighth Army took the offensive against the line of the Bzura. Unclarified though the situation was on the army's front, von Blaskowitz, in attacking, acted in accordance with an old German precept: In a doubtful situation the offensive is the best policy and the seizure of the initiative compensates for the weakness of one's own force. The necessary corollary to this precept in the German doctrine is that reinforcements must be provided to maintain any advantages gained. By utilizing the mobility of motorized and armored units, those reinforcements ultimately were provided, and were to turn a threatened disaster into victory.

A local crisis began to develop on the 9th and 10th on the left flank, where the 30th Division was struck by five Polish divisions. The advance guard of the 30th Division was 10 miles ahead of the main body in Leczyca and the division commander vainly endeavored to regain contact by counterattack. He failed, and the division, including the advance guard, withdrew to the southeast.

The X Corps advanced rapidly and seized the various crossings over the Bzura. On the 9th the Eighth Army seized Lowicz and Sochaczew on the river, northwest of Lodz. Also on the 9th the 30th Division reached Leczyca. These advances, however, were made only after heavy fighting and they resulted in many casualties. By the morning of the 11th the Army was spread out on a broad front and forced to assume the defensive.

On the 12th the Polish Army, seizing the opportunity for a possible escape through the encircling German armies, counterattacked along the whole front of the Bzura. Its main effort was made west of Lowicz and drove the German forces west of the town back across the Bzura. Continued hard fighting on the 12th drove the German forces on to Strykow.

The crisis was finally overcome, however, by three German counter-measures:

(a) Every available man and tank of the Tenth Army as well as tank elements of the Third Army were diverted from the vicinity of Warsaw to stop the Polish troops that had captured Lowicz and Sochaczew.

(b) Reserve divisions close behind the Eighth Army were rushed into position.

(c) German Air Force units were diverted from their strategic missions.

The mass of the Eighth Army was turned completely around from Skierniewice toward the Bzura for the counterattack. The XIII Corps east of Lodz was turned north and arrived in time to check the Poles east of Lowicz. A portion of the Tenth Army also turned north to assist in holding the Lowicz line and to cut through the Vistula between Warsaw and the Bzura. By the 14th the Polish attacks were completely halted.

For their part, the reinforced Air Force units assigned to help the Eighth Army launched strong bombardments against the Polish forces north of Lodz on the 11th and 12th. These attacks impeded their movements, paralyzed their reserves, and destroyed their supply installations, contributing in good measure to the final success of the German Army along the Bzura.

(4) *Fourth Army* (von Kluge).—At the opening of this phase the Fourth Army was divided into two corps groups, one on each side of the Vistula. The III Corps had reached positions south of Bromberg on September 8, and the II Corps on the north bank had passed the Drewenz River and reached the town of Lypin.

The III Corps, consisting only of foot divisions, moved south-eastward by forced marches to join in the great battle raging on the Bzura between Kutno and Lodz. This corps was near Kutno on the evening of the 14th.

The II Corps made daily advances of extraordinary depth. By the 10th, Plock on the north bank of the Vistula and northeast of Kutno had been captured, and on the 12th the town of Wysogrod, opposite the mouth of the Bzura, was seized.

During this advance of the Fourth Army, frontier detachments and militia units of the German Army entered the Province of Posen, which had been evacuated by Polish regular units. No resistance was encountered and the entire region, unwasted by war, fell into German hands.

(5) *Third Army* (von Kuechler).—On September 9 the Third Army reached the Bug River between Sereck and Brok and gained

a foothold on the south bank in the vicinity of Wyszkw. The following day Wyszkw and Brok were captured, and on the 11th two of the three defending Polish divisions, the 8th and the 20th, withdrew southwestward into Warsaw. The other division of this group, the 1st, retreated southeastward toward Siedlce.

Advancing rapidly on the 12th, the Third Army cut the railroad lines leading from Warsaw to Bialystok and Siedlce. The bulk of the army then turned westward toward Warsaw. On the 14th a line of investment opposite the suburb of Praga was occupied and the encirclement of the Polish capital was completed. A second major operation of the Third Army in this phase was the advance on Brest Litovsk, which had been started on September 9 by the strong group of divisions that had been assembling in the area Lyck--Johannishburg. In a series of rapid advances this group captured Brest Litovsk on the 14th. Meanwhile the 18th Polish Division at Ostroleka, finding German forces on all sides, tried to withdraw southeastward, but it was surrounded near Ostrow Mazowieckie and lost 6,000 prisoners and 18 guns.

The encirclement of Warsaw and the capture of Brest Litovsk were the two most important successes of the Third Army during this phase. The first helped eventually to seal the fate of the Polish capital and the second insured that Poland would be unable to offer effective resistance in her vast eastern territories.

(6) *Air operations*.—During the period September 9–15 the German air fleets carried out large-scale bombardments designed to paralyze the entire Polish railroad net east of the Vistula and to prevent the transport westward by rail of reserve units mobilizing in East Poland. These operations were partly interrupted between September 11 and 14 by the necessity of diverting bombing squadrons to assist the hard-pressed Eighth Army north of Lodz.

(7) *Polish strategy* (Map No. 3).—As the situation of the Polish armies grew more critical, especially in the bend of the Vistula, the Polish High Command on September 10 finally began to issue a series of orders that were intended to effect a retirement of Poland's hard-pressed armies to the southeast for a stand in East Little Poland. Full advantage was to be taken of existing rivers in the zone of retirement. In this region, in addition to a comparatively few whole divisions which had managed to escape encirclement, a considerable number of reservists and remnants of units were accumulated. A great shortage of weapons and other supplies, however, made it impossible to equip these troops properly.

By the time the last of the orders had been issued on September 15 by the Polish High Command, the retirement generally called for—

(a) A covering force along the right bank of the Vistula from the vicinity of Warsaw to Sandomierz, thence along the west bank of the San River to the Carpathian Mountains, with the mission of preparing and holding crossings for the troops in the Bzura region who were ordered to fight their way to the southeast. That part of the covering position south of Sandomierz was to make the greatest holding effort.

(b) A drive in the direction of Radom—Krasnik for the forces in the general vicinity of Kutno.

(c) A delaying action of the forces on the Bug River toward the southeast in the direction of Siedlce—Parczew, to positions behind the line Deblin—Wieprz River—Kock—Brest Litovsk.

(d) The organization of isolated centers of defense which were to remain at Warsaw, Modlin, Brest Litovsk, the vicinity of Krasnik, Włodzinierz, Sokal, Tomaszów Lubelski, Przemyśl, Lemberg, and Tarnopol.

(e) A final defensive line—for forces withdrawing behind the covering position—from which further operations could be conducted, in the area south of the Dniester River through Halicz, Żydaczów, Stryj, Skole, to the east of the Stryj River. For the protection of the crossing of the Stryj and Dniester Rivers, bridgeheads were established and garrisoned by infantry divisions from the region of Moszciska—Sadowa Wisznia. This final position was also intended to protect the communications with Rumania.

The desperate efforts made by the Polish forces to escape encirclement on the Bzura River temporarily relieved the pressure on other fronts. But the withdrawal plan as a whole was not possible of execution because of the rapidity of the break-through by the German armored divisions and their unexpected interception of retiring Polish columns.

d. Phase IV: September 15–20—Annihilation of Polish armies and Russian invasion (map No. 2).

(1) *Fourteenth Army (List).*—On the evening of September 14 the center group of the Fourteenth Army had flung a thin outpost line around three sides of the city of Lemberg—north, west, and south. The right wing of the army still stood motionless around Sambor, a town in the Carpathian foothills, which it had reached on the 12th.

The Polish forces in Galicia, half demoralized by their long retreat and weakened by straggling and loss of prisoners, stood in two main groups. The larger, composed of the 5th, 6th, 21st, 22d, and 23d Divisions and an armored brigade, was slowly withdrawing north-eastward, and by the 15th was along the San River southeast of Sandomierz. The smaller group, made up of the 11th and 24th Divisions, lay between Przemyśl and Lemberg.

Serious fighting began on the 16th between the left wing of General List's army and the large Polish group of five divisions and an armored brigade, whose possible withdrawal to Rumania had been intercepted by German armored troops who had reached the region between Zamosc and Chelm.

The battle began in the vicinity of Bilgoraj, a town 80 miles northwest of Lemberg and 40 miles east of Sandomierz. The conflict here continued until about the 20th, when 60,000 Polish troops surrendered and 130 cannons were captured. Remnants of the Polish Army, including the 5th Division, escaped the German net and fled eastward until they fell into the hands of the advancing Russians.

On the 17th occurred the fruition of the German plan for the great outer double envelopment around the Polish armies. At Wlodawa scouting elements of the motorized reconnaissance battalions of the Fourteenth Army established contact with similar units of the Third Army advancing south from Brest Litovsk. However, the situation that was crystallizing in a tight encirclement between Kutno and Warsaw made this outer ring unnecessary and of no great importance.

Less is known of the fate of the original Polish Przemysl Army Group, but 10,000 of its men were captured near Rawa Ruska on the 18th.

Russian forces began an invasion on September 17, and by the evening of the 20th Soviet units were on the eastern outskirts of Lemberg.

(2) *Tenth Army* (von Reichenau).—The right group of the Tenth Army regrouped itself on September 15, and the forces that took Radom and Zwolen crossed the Vistula and advanced toward Lublin. Deblin, an obsolescent ring fortress, was taken on the 16th, together with its undestroyed Polish air depot with 100 airplanes. On the 17th Lublin was captured and on the 18th advanced elements reached Krasnystaw, a point from which they were able to assist the Fourteenth Army in forcing the surrender of the Polish southern armies at Bilgoraj.

The Tenth Army's part in the battle between Kutno and the Bzura will be dealt with in the operations of the Eighth Army.

(3) *Eighth Army* (von Blaskowitz).—The concentric attack of the German armies on the surrounded Polish forces hemmed in between Kutno on the west and Blonie in the east, and between the Vistula in the north and the Bzura in the south, began on September 15. The entire Eighth Army exerted its whole might from the south against the line of the Bzura. The major part of the Tenth Army's left wing attacked from Warsaw in a westerly direction.

Simultaneously the III Corps of the Fourth Army advanced south-eastward from Wloclawek toward Kutno. Other forces of the Fourth Army held the north bank of the Vistula from Plock to Wyszogrod, barring a withdrawal there.

Under German thrusts from all directions the resistance of the Polish forces rapidly crumbled. The Polish Army appeared to have been exhausted and partly demoralized by its courageous but fruitless attempts to break out of the German ring. Continued bombing attacks contributed their part to this break-down.

Kutno was captured on the 16th by the III Corps of the Fourth Army. On the same day the Eighth Army crossed the Bzura and the Tenth Army gained ground in the direction of Sochaczew and Lowicz.

The final disintegration of the Polish Army began on the 17th. It had been pressed into a very narrow area, southeast of Wyszogrod, between the Vistula and the Bzura. Isolated units began to surrender, and on the 19th the last of the Polish troops in this area gave up their arms. An official German communique on September 21 claimed that 170,000 men were captured, one of the largest surrenders in military history. One German army captured 320 guns and 40 tanks, according to the communique, but no complete statement of booty has ever been issued by the German High Command.

Polish prisoners taken in the battle of the Bzura belonged to the 2d, 4th, 10th, 13th, 14th, 15th, 16th, 17th, 25th, 26th, 28th, and 30th Divisions. The larger part of three cavalry brigades was also captured.

(4) *Fourth Army* (von Kluge).—While the III Corps of the Fourth Army was playing an important role in the annihilation battle on the Bzura, the II Corps established a tight blockade west, north, and east of the fortress of Modlin. The actual siege was begun on September 19 by a special army group under General of Infantry Strauss.

On September 15 elements of the Fourth Army occupied the port of Gdynia in the Corridor.

(5) *Third Army* (von Kuechler).—The Third Army intensified its siege of Warsaw, closely blockading the suburb of Praga, east of the Vistula. Several attempts by Polish forces to break out of the capital failed, and in one effort, southeast of Praga, on September 16, the Germans captured 8,000 prisoners and 126 guns. But owing to the firm and courageous attitude of Polish authorities, all efforts by the German High Command to induce Warsaw to surrender failed.

East of Warsaw the 1st Polish Division tried to escape to the south-east, but just southeast of Siedlce it was forced to surrender 12,000

officers and men, 80 guns, and 6 tanks. However, some few minor elements escaped to the east.

Bialystok was captured on the 15th by the 23d German Division, which was one of the group that had been assembled in the area Lyck—Johannisburg in East Prussia for the operations in eastern Poland.

The Russian invasion from the east resulted in the capture of Młodeczno and Baranowicze on September 18 and, on the 20th, of Vilna, principal city of northeast Poland. Nowhere did the Poles resist the Russians effectively, and they offered no opposition at all at Vilna.

(6) *Air operations.*—The air operations during this phase were considerably less extensive than before. Polish concentrations in the regions east of the Vistula were bombed and so were the airfields adjoining the Russian border. The last remaining Polish radio stations at Vilna and Baranowicze were destroyed.

The German Air Force also played an important role in the last phase of the battle of the Bzura, bombing troop units and contributing to their demoralization.

e. Phase V: September 21–October 5—Occupation of East Poland.

It is not possible in this phase to describe the operations of individual armies. The only Polish troops still at large in German-occupied Poland on September 20 were the garrisons of Warsaw and Modlin, which had intercommunication until September 22; the naval garrison of the Hela Peninsula at the tip of the Corridor; a small mixed Polish force occupying Lemberg; and a considerable number of Polish units, mostly reserve formations, in the area of Deblin and Lublin.

In this phase the sieges of Warsaw and Modlin are the most important military operations. The operations against Warsaw were conducted by the Eighth Army on the west bank of the Vistula. The Third Army operated against the suburb of Praga on the east bank.

On September 22 the German divisions on both sides of the river launched local attacks that separated Modlin and Warsaw. The Germans suffered severe losses, but the siege lines drew tighter around both sides. An intensified artillery and air bombardment was hurled on the capital from the 24th to the 27th. It is estimated that 20 percent of all houses were destroyed and that about 60 percent received one or more hits.

Warsaw surrendered unconditionally on September 27 with its garrison of 102,000 men, but German troops did not formally occupy it until October 5. Modlin gave up on the 28th, surrendering a garrison of 30,000 men.

Lemberg surrendered to the encircling German and Russian armies on September 21, and on the next day the German forces withdrew to

the San River, which was the agreed line of demarcation between Germany and Russia. The garrison at Hela, besieged by land and naval forces, surrendered on October 1.

Few details are known of the final military operations east of Deblin, except that fighting was serious and the Germans suffered many casualties. The Polish 37th and 41st Divisions, reserve units, organized in garrisons east of the Vistula, participated in these engagements. These Polish forces, numbering about 8,000 men, surrendered on October 5 at Kock, a town 30 miles east of Deblin, thus ending the last vestige of resistance on the thirty-fifth day of the campaign. The cost in casualties to Germany was approximately 10,000 killed, 30,000 wounded, and 3,000 missing.

5. Lessons.—During years of peace the guiding purpose of the German High Command was to organize, train, and equip an Army that, by being able to retain the initiative and maintain sustained offensive power in the attacking echelon, could avoid the stalemates of the first World War. The principles enunciated in the following lessons will give some idea how this purpose was achieved in the Polish campaign.

a. General and strategic considerations.—(1) *Superiority.*—The superiority, in all the potentialities of war, of the German Army of about 1,500,000 men must be reckoned as the principal reason for the swift victory over about 600,000 Poles actually engaged. But despite this superiority of the German Army, Poland's defeat was hastened and made inevitable by certain negative factors in the strategy of the Polish High Command:

(a) Failure to estimate accurately the gravity of the situation and the strength of the German Army, and the consequent failure to take adequate measures of security.

(b) Failure to complete mobilization in time, although the emergency had long been obvious.

(c) Failure to employ the military forces available to the best possible advantage. Geographically Poland was a ready-made salient because of the location of Slovakia and East Prussia on her southern and northern flanks, respectively. Instead of maintaining a well-organized and strongly-held interior defensive position, with adequate covering forces in front and adequate protective forces on the flanks and strong reserves in the rear, the Polish High Command chose to string out a major percentage of its Army in a thin cordon along the frontiers. Thus the Polish troops were far in advance of Poland's main defensive and traditional river-line positions. There was a semblance of disposition in depth of the divisions in the Lodz Group,

but since its reserves had been placed too far in the rear for effective support, even this one group was unable to act cohesively.

(d) Failure to disperse the Polish Air Force and to construct emergency airfields.

(2) *Double envelopment, intelligence operations.*—The plan of the German High Command for both an inner and an outer double envelopment of the Polish armies was daring but strategically sound. This plan was greatly facilitated, of course, by Poland's geographical situation, which enabled the Germans to strike at the flanks at once, but it was not initiated and carried through without the effective use of intelligence operations both before and during the conflict. Long before the campaign began, the German High Command had obtained intimate knowledge of the intentions and dispositions of the Polish Army, and was therefore able to eliminate doubts and provide for contingencies in reaching decisions. The decision to attempt the envelopments could hardly have been risked, in spite of the superiority of the German Army, if the Polish Army and its leadership had not been accurately evaluated. As it happened, the inner envelopment was so successfully executed that the outer envelopment, though also effective, was rendered unnecessary.

(3) *Fortifications, reserves.*—The German High Command secured its center with fortifications in order both to economize on troops and to concentrate its maximum striking power on the wings of its Army, particularly on the southern wing. These fortifications were comparatively lightly manned with border troops and militia, but sufficient active and reserve divisions were available for their immediate reinforcement.

(4) *Aviation.*—By employing its full striking power at the very beginning to destroy that of Poland, the German Air Force gained the necessary freedom of action to operate unmolested in all parts of the country. The Polish Air Force was inferior and severely limited, but the German High Command took no chances with its superiority in this respect. Both before and while its armies swept into battle, the Germans sent ahead more than two air fleets to destroy Polish airfields and aircraft. Once the Polish Air Force was neutralized, all important rail junctions were destroyed, resulting in the disruption of Poland's main east-west and north-south communications. In consequence of this action, further mobilization was prevented and the service of supply impeded. Within 4 days Poland's industries, particularly her aviation plants, and her pilot training schools had felt the full fury of the German air assault. Poland had lost not only her aerial striking power but also the means of replenishing it, and thereafter was compelled to fight almost blind.

(5) *Motorized and armored corps.*—Corps consisting of motorized and armored divisions appeared for the first time in the Polish campaign and proved their strategic capabilities both in increased mobility and in added fire and striking power. For example, General Hoepner's panzer corps of von Reichenau's Tenth Army took advantage of a gap in the Polish Lodz Group at the juncture of two elements and plunged through it for a distance of 130 miles, a bold action that changed the strategic situation overnight. On the evening of the eighth day of the campaign General Hoepner's forces reached the suburbs of Warsaw, a distance of about 200 miles from the frontier.

b. *Combined operations.*—(1) *Unity of command.*—Unity of command was strictly adhered to in the Germany Army and the operations of the Polish campaign provide an everlasting example of what can be accomplished by the separate branches when they are placed under the control of a single, supreme head. The example of the application of this principle in the Polish operations was so successful that the German High Command accepted it as a pattern to be followed in future campaigns.

(2) *Cooperation of arms.*—The close cooperation achieved by the Germans in combined operations of the Infantry, Artillery, armored and motorized units, and the Air Force enabled them to perform seemingly impossible feats on the field of battle. The partnership, especially between air power and mechanized forces, made it possible for the offensive to sweep forward so rapidly that defensive reserves were of little value unless they were fully mobile or already occupied some strategic position. Thus the Infantry was able to close with the enemy while still in possession of adequate power to force a favorable decision. On many occasions the Infantry, upon reaching an objective, encountered a foe that was demoralized or already crushed.

(3) *Intelligence cooperation.*—The three-way cooperation maintained by the German Air Force, by combat intelligence and reconnaissance elements, and by the armored forces permitted the latter to operate effectively far ahead of the main forces.

(4) *Cooperation of engineers.*—The German engineers, who were specially trained as shock troops and who frequently had to fight shoulder to shoulder with the Infantry in carrying out their missions, facilitated the advance of the German armies by their speed and efficiency in solving engineering problems. Thoroughly trained, they sped up the advance by removing road blocks and constructing new bridges, or by repairing and maintaining hundreds of demolished bridges, over the Oder, San, Warthe, Vistula, Narew, and Bug Rivers and their tributaries.

(5) *Cooperation in a special situation.*—When the attack on the left flank of von Blaskowitz's Eighth Army by the Polish forces retreating from the Posen area threatened the whole German plan of campaign, the German High Command turned this threatened disaster into a decisive victory by the smooth coordination and cooperation of all arms. Air units were diverted from their strategic missions, and added the smashing and terrorizing effect of shock action to the other German counter measures. Hoepner's panzer corps, which became the left flank of von Reichenau's Tenth Army beyond the Pilica River, swung back from Warsaw and helped to encircle and annihilate the formidable Polish mass on the Bzura River. This Polish force might have won a victory if battlefield control of the German forces had been less flexible and unified. But within 3 days the Germans had checked the Polish threat and quickly resumed the general plan of the campaign.

(6) *Relentlessness of pursuit.*—The main objective of the German High Command was to destroy the Polish armies, and the accomplishment of this purpose was hastened by audacious and relentless pursuits that taxed the German troops almost to the limit of endurance. Intensive pressure on the Polish forces was constantly maintained. Their communications were continually disrupted. They were prevented from taking up delaying positions. German mechanized columns so rapidly encircled the Poles that they were never able to reach their final defensive river line.

c. *Tactics and doctrine.*—(1) *Leadership, initiative.*—The emphasis which the Germans placed on the development of leadership and initiative in commanders during years of preparatory training brought its rewards in the Polish campaign. With confidence that these principles had been properly inculcated, all commanders, from the highest to the lowest echelons, felt free to carry out their missions or meet changes in situations with a minimum of interference by higher commanders. A good example of initiative by a higher commander is furnished by the important division of General Hoth, who commanded a panzer corps on the right flank of von Reichenau's Tenth Army. Southeast of Kielce, General Hoth, ignoring any dangers on his flanks, pushed his corps along the west banks of the Vistula, outflanked the thin Polish defense line in the Lysa Gora Hills, and, in short order, got behind the Polish positions. There, southeast of Radom, on September 9, with their backs to the Vistula, his men stood facing the retreating Poles. By this action General Hoth's armored forces were in position to play a leading role in the subsequent battle of Radom. As other German forces attacked frontally, his tank units plunged into the Polish rear, closing a trap in which they captured many more prisoners than their own strength.

(2) *Intelligence, fifth column activities.*—German intelligence and fifth column activities were carried on with extreme efficiency and effectiveness in facilitating the advance of ground forces and in spotting targets for the Air Force. Germany found it comparatively easy to conduct subversive activities among the large German minority in Poland on the borders of the Reich.

For obvious reasons, exact confirmed information on fifth column activities in Poland is lacking. However, the following instances have been reported in good faith by official American observers from testimony which they considered reliable:

Before the invasion began, rioting occurred among the German minority, and Polish officials were assassinated. This sort of activity was continued after the German advance, and the German fifth columnists aided the invaders in many other ways behind the Polish lines. The Germans were supplied with horses and with hidden stores of gasoline and food. Parachutists and troop transport airplanes were guided to landing grounds or warned of danger by signals. The locations of Polish troop headquarters, concentrations, batteries, and land mines were betrayed by secret wireless communications or signals from behind the Polish lines. Polish officers were assassinated. Polish troops and airplanes were fired on and billets burned. False orders and rumors were circulated, causing much confusion. Military communication lines were cut so frequently that it was impossible to use them. German pilots reported that most of the landings of air-borne troops would have failed but for the system of fifth column signals, such as flaming haystacks and huts; sheets and newspapers arranged in special patterns; corn and grass cut in telltale shapes; and torch signaling.

(3) *Mobility, supporting fire.*—A high degree of mobility and strong supporting fire exerted great influence in bringing about a speedy German victory. This combination made it possible to employ maximum striking power in the forward echelon and to concentrate it at the most critical point and time during combat. Thus the factors of power and speed were highly coordinated to serve the commander in a manner best suited to his purpose. The Infantry was equipped with organic artillery—75-mm and 150-mm howitzers—manned by infantrymen themselves on the front line. When the speed of advance elements of armored forces and motorized and foot Infantry carried them beyond the range of artillery support, such units received immediate cooperation from dive and other types of bombers.

(4) *Combat groups.*—In the attack of large units German infantry divisions were employed on broad fronts, and each division within the corps was assigned to a zone of action and an objective. Within a

division zone of action the advance was conducted by reinforced regiments known in the German Army as "March Combat Groups" (combat teams), which operated almost independently. All important units, including lower combat teams, were made self-sufficient as far as supporting fire was concerned.

(5) *Security*.—The security of marching columns was assured by—

(a) Complete air support and superiority.

(b) The forward positions of mechanized forces.

(c) The great depth and breadth of air and ground reconnaissance, each corps including a strong and tactically complete motorized reconnaissance unit.

(d) The convergence of the main thrusts which drew units closer together as they reached their final objective.

(6) *Reconnaissance*.—The German High Command laid great stress upon reconnaissance. All units down to and including the infantry regiment were provided with the means of carrying out this vital combat function. Horse and cyclist units were employed for close reconnaissance, and motorized elements were used for distant reconnaissance.

(7) *Infiltration, encirclement*.—Tactics of deep infiltration and encirclement were employed to break down resistance. While engaged in such tactics, German units were intent on maintaining contact with the enemy rather than with friendly flanking troops. Frequently the main German forces, leaving weaker units to pin the enemy down, bypassed strong Polish positions in order to sever lines of communications and attack from the rear.

(8) *Field orders*.—The German commanders avoided the use of lengthy written field orders. Elimination of lengthy written orders saved much time and played a large part in the successes gained by independent columns, which were often directed orally. Operation orders consisted mainly of intention, and the method of execution depended largely on the initiative of the officer concerned.

(9) *Training*.—During time of peace the German Army had been thoroughly conditioned physically, and in Poland the hardness of the German soldier enabled him to perform feats of endurance. The Infantry marched an average of 18 miles a day during the greater part of the campaign. Many troops, such as parachutists and mountain units, were specially trained for specific missions. Three mountain divisions were employed to force the passes of the Carpathian Mountains.





